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09/692,169	10/19/2000	Joseph S. Rosen	1342-US	7258
24313	7590	06/14/2005	EXAMINER KADING, JOSHUA A	
TERADYNE, INC 321 HARRISON AVE BOSTON, MA 02118			ART UNIT 2661	PAPER NUMBER

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/692,169

Applicant(s)

ROSEN, JOSEPH S.

Examiner

Joshua Kading

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 February 2005.  
2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-43 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 1-18 is/are allowed.  
6) ☒ Claim(s) 19-34 and 37-43 is/are rejected.  
7) ☒ Claim(s) 35 and 36 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 37 and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,292,468 B1, Sanderson.

Regarding claim 37, Sanderson discloses "a method of predicting the data rate of a line for carrying signals between a near end a far end modem, comprising:

a) providing information that predicts data rate on a line for each of a plurality of line models (*col. 6, lines 41-455 where the pseudo random sequence generated is information used to test the line and classify it in a particular category or model*);

b) making measurements on the line and using the measurements to select one of the plurality of line models to represent the line (*col. 6, lines 41-55 where the color indicated by the LED is chosen based on the information obtained from the pseudo random sequence*);"

c) selecting the data rate from the information provided for the selected line model (*col. 6, lines 47-55 where the choosing of the LED color selects the data rate or service available for the line*)."

Regarding claim 41, Sanderson discloses, "wherein the step of providing information that predicts data rate on a line for each of a plurality of line models comprises: a) providing sets of data, each data set providing information that predicts the data rate using a particular near end and far end modem (*col. 3, lines 29-31 where the provider end and customer end represent near and far end modems*), and b) selecting one of the data sets based on the pair of modems used on the line (*col. 3, lines 38-41 where the output is as described in col. 6, lines 47-55*)."

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderson.

Regarding claim 42, Sanderson discloses "a method of predicting the data rate of a line under test within a...bundle, comprising:

a) determining a model of noise on the line from a prediction of the number of disturbing signals that are carried within the...bundle (*col. 6, lines 41-47 where the model is determined from the pseudo random test signals*);

b) de-rating the performance of the line based on the noise model (*col. 6, lines 47-55 where de-rating the performance is the categorization of the performance based on the line characteristics*)."

However, Sanderson explicitly lacks the bundle is a "cable" bundle. Although Sanderson does not talk about a "cable bundle" he does imply that the lines that are transmitted across the network are bundled, this can be read in col. 2, lines 17-27. The existence of taps means that each customer line comes from a larger line (or bundle of lines) communicating with the network. Therefore, the plurality of customer lines forms a "cable bundle" that is used to transmit data to and from the network.

It would have been obvious to one with ordinary skill in the art at the time of invention to have the cable bundle for the purpose of combining all the customer lines into one bundle for transporting information to and from the network (*Sanderson, col. 2, lines 17-27 where again the line taps suggest that they come from a larger bundle of lines used to transport information*). The motivation for using a bundle is to save on overall cost and resources, i.e. if each customer line feed directly to and from the network there would be high costs and large resources used to accommodate this scenario, therefore it is better to bundle the lines into one larger bundle for transport.

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5. Claims 19-27, 29-34, 38-40, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderson in view of U.S. Patent 6,456,694 B1, Posthuma.

Regarding claim 19, Sanderson discloses "a computer program product for preparing results from predicting the ability of an existing line to support high speed access, the computer program product comprising a computer usable medium having computer readable code thereon (*col. 6, lines 43-47 where the "digital signal processor" is a computer and the configuring of the DSP is to give the DSP instructions for operating*), including program code comprising:

instructions for causing a test unit to receive the results of line testing for high speed access (*col. 3, lines 29-41 where a "digital subscriber line" is high speed access and lines 38-41 specifically talk about receiving the results*); and

instructions for causing said test unit to bin the test results into one of at least three categories, wherein a first of said at least three categories indicates the selected line cannot support high speed access, wherein a second of said at least three categories indicates the selected line can support high speed access (*col. 6, lines 41-55 where the categories of the results are the colors of the LED, green represents the case where the line can support high speed access, the red represents the case where the line cannot support high speed access, and a color along the gradient represents the "medium" level of service or where the line cannot currently support the high speed access*)."

However, Sanderson lacks what Posthuma disclose, "wherein a third of said at least three categories indicates the selected line has a condition creating an impediment to high speed access that can be removed (*col. 5, lines 13-17*)."

It would have been obvious to one of ordinary skill in the art at the time of invention to include the removing of an impediment with the line categorizing of Sanderson. The motivation for removing the impediment is to allow access to the high-speed service.

Regarding claim 20, Sanderson and Posthuma lack, "a fourth category, wherein said fourth category indicates the characteristics of the selected line are undetermined." Although Sanderson and Posthuma do not disclose "a fourth category", this fourth category of "undeterminedness" must exist. The whole purpose of testing the line is to ascertain, from a line with unknown characteristics, the characteristics of the line and categorize the line. Since, before the test, the line's characteristics are unknown or undetermined, there can be no service categorization and thus the LED light is not on (this is implied by the fact that only the spectrum between red and green categorize the line when the characteristics are determined, thus if the characteristics are undetermined, the LED has to be off or at least a different color than the other categories). Ultimately this is the fourth category of a service line, i.e. the undetermined conditions of the line result in the LED not being on. It would have been obvious to one with ordinary skill in the art at the time of invention to have a fourth category of undeterminedness, because this is what the line testing is set forth to resolve. The

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motivation for testing a line to resolve the undeterminedness of it is so that it can be known what type of data (e.g. high speed or not) can be transmitted across the line.

Regarding claim 21, Posthuma lacks what Sanderson discloses, "wherein said step of receiving the results of line testing comprises receiving the results of line testing for ISDN access (*col. 1, lines 56-61*).” It would have been obvious to one of ordinary skill in the art to include line testing of ISDN access for the same reasons and motivation as in claim 19.

Regarding claim 22, Posthuma lacks what Sanderson discloses, "wherein said step of receiving the results of line testing comprises receiving the results of line testing for xDSL access (*col. 1, lines 56-57*).” It would have been obvious to one of ordinary skill in the art to include the line testing for xDSL access for the same reasons and motivation as in claim 19.

Regarding claim 23, Posthuma lacks what Sanderson discloses, "wherein said step of receiving the results of line testing for xDSL access comprises receiving the results of line testing for ADSL access (*col. 1, lines 56-57*).” It would have been obvious to one of ordinary skill in the art to include the line testing for ADSL access for the same reasons and motivation as in claim 22.



Regarding claim 24, Posthuma lacks what Sanderson discloses, "wherein said ADSL access comprises at least one of G.dmt access and G.lite access (*col. 6, lines 9-11*).” It would have been obvious to one of ordinary skill in the art to include the G.dmt and G.lite access for the same reasons and motivation as in claim 23.

Regarding claim 25, Posthuma lacks what Sanderson discloses, "further comprising the step of color-coding each of said categories, wherein each category has a respective color (*col. 6, lines 41-51 where the LED color represents the categories of service of the line*).” It would have been obvious to one of ordinary skill in the art to include each category having a respective color for the same reasons and motivation as in claim 19.

Regarding claim 26, Sanderson lacks what Posthuma discloses "wherein said step of binning the test results further comprises said third of at least three categories would be able to support high speed access upon removal of an impediment on said selected line (*col. 5, lines 10-17*).” It would have been obvious to one with ordinary skill in the art at the time of invention to have the line support high speed access if a line impediment were removed for the purpose of qualifying the line for high speed service (*Sanderson, col. 2, lines 28-32*). The motivation being that if a line is qualified for high speed service then customers can subscribe to that line and use it for their own use.

Regarding claim 27, Sanderson lacks what Posthuma further discloses “wherein said impediment is selected from the group consisting of a load coil and a bridged tap (*col. 5, lines 10-17*).” It would have been obvious to one with ordinary skill in the art at the time of invention to include the load coil with the computer program of claim 26 for the same reasons and motivation as in claim 26.

Regarding claim 29, Posthuma lacks what Sanderson discloses, “wherein said step of color-coding comprises coding said first of said at least three categories red (*col. 6, lines 47-51*), said second of said at least three categories green (*col. 6, lines 47-51*)...” However, Sanderson explicitly lacks “said third of said at least three categories yellow.” Although Sanderson does not explicitly state that the third category is yellow, he does state that the third category is “along the gradient” of the colors between red and green. Since yellow is along the gradient it is reasonable to assume that the third category could be yellow. It would have been obvious to one with ordinary skill in the art at the time of invention to have the third category as yellow as a matter of design choice. In terms of a motivation for choosing yellow, it doesn’t really matter what color the third category is, as long as the third color is distinguishable from the other two colors. That way the categorization of line states into three categories can be achieved. Sanderson fully accounts for this in the gradient of the LED colors in *col. 6, lines 47-51*.

Regarding claim 30, Sanderson and Posthuma lack, “said fourth category is color-coded gray.” As with claim 29, it does not matter what color the fourth category is

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given as long as it is different and distinguishable from the other colors. Sanderson accomplishes this distinguishableness by not even turning the LED on what the line's characteristics are unknown. It would have been obvious to one with ordinary skill in the art at the time of invention to have the fourth category as gray as a matter of design choice. In terms of a motivation for choosing gray, it doesn't really matter what color the third category is, as long as the fourth color is distinguishable from the other three colors. That way the categorization of line states into four categories can be achieved. Sanderson fully accounts for this in the gradient of the LED colors in col. 6, lines 47-51.

Regarding claim 31, Posthuma lacks what Sanderson discloses, "the initial step of testing a line (*col. 3, lines 29-38*).” It would have been obvious to one of ordinary skill in the art to include testing the line for the same reasons and motivation as in claim 19.

Regarding claim 32, Posthuma lacks what Sanderson discloses, "driving said line with a signal (*col. 6, lines 41-43*); measuring said line (*col. 6, lines 43-44*); estimating characteristics of said line from the results of said measuring said line (*col. 6, lines 43-47*); and predicting a data rate supportable by said line from said line characteristics (*col. 6, lines 47-55 where the service level indicates the data rate supportable by the line*).” It would have been obvious to one of ordinary skill in the art to include the further details of line testing for the same reasons and motivation as in claim 31.

Regarding claim 33, Sanderson lacks what Posthuma discloses "wherein said step of estimating characteristics of said line include at least one of:... determining the presence of a load coil on said line (*col. 6, lines 15-17*)..." It would have been obvious to one with ordinary skill in the art at the time of invention to include the "determining the presence of a load coil on said line" for the purpose of identifying an impediment on the line so that it can be removed or fixed. The motivation being that if a line impediment is removed, the line can qualify for high-speed access and thus customers can subscribe to the line (*Sanderson, col. 2, lines 28-32*).

Regarding claim 34, Sanderson lacks what Posthuma further discloses "wherein said step of determining the presence of other path elements includes at least one of:... determining the presence of a filter (*col. 6, lines 15-17 where, as is known in the art, a load coil is a low-pass filter*)..." It would have been obvious to one with ordinary skill in the art at the time of invention to include the "determining the presence of a filter" with the method and computer program of claim 33 for the same reasons and motivation as in claim 33.

Regarding claim 38, Sanderson lacks what Posthuma discloses "wherein the provided information that predicts data rate includes rates for upstream and downstream data transmissions (*col. 6, lines 19-23 where it is known in the art that ADSL has different rates for upstream and downstream traffic; it should also be noted that although Posthuma does not explicitly say the provided information contains*

*information about data rates for upstream and downstream transmission, the different data rates for each stream must be in the information to qualify the line for ADSL transmission so that it is known the speed at which the line can transmit data).*" It would have been obvious to one with ordinary skill in the art at the time of invention to include the downstream and upstream data rates for the purpose of categorizing the lines based on the speed and type of data it can transmit (*Sanderson, col. 6, lines 41-55*). The motivation for doing this is so that higher speed lines will be given higher rate traffic and lower speed lines will be given the lower speed traffic.

Regarding claim 39, Sanderson lacks what Posthuma further discloses "wherein the plurality of line models includes models of lines differing lengths (*col. 6, lines 15-17*).*"* It would have been obvious to one with ordinary skill in the art at the time of invention to include the line lengths for the purpose of identifying what type of service the line can handle (*Sanderson, col. 6, lines 41-55*). The motivation for identifying line length and categorizing a line using that characteristic is because (as is known in the art) the line length is directly attributable to losses in the line, which directly affects the ability of a line to transmit data.

Regarding claim 40, Sanderson lacks what Posthuma further discloses "wherein the plurality of line models include models of lines having bridge taps at differing locations (*col. 6, lines 15-17 where it is known in the art that bridge taps are access points to different residences (i.e. different line connections) and therefore must be*

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*placed at differing locations).*" It would have been obvious to one with ordinary skill in the art at the time of invention to include the bridge taps for the purpose of identifying what type of service the line can handle (*Sanderson, col. 6, lines 41-55*). The motivation for having models with bridge taps at differing locations and categorizing a line using that characteristic is because (as is known in the art) the locations of line taps is directly attributable to losses in the line, which directly effects the ability of a line to transmit data.

Regarding claim 43, Sanderson lacks what Posthuma discloses "wherein the step of de-rating comprises: a) measuring in advance performance of a plurality of model lines when a plurality of combinations of disturbing signals are present (*col. 6, lines 19-21 where high speed services are the model lines and all have their own performance thresholds that must be met in order to use these lines*); b) measuring characteristics of the line under test and matching the line under test to one of the plurality of model lines (*col. 6, lines 12-21*); c) selecting one of the combinations of disturbing signals expected to be present in the cable bundle (*col. 6, lines 19-23 where selection of the appropriate high speed service implies that the measured characteristics take into account the disturbing signals and other variants in the matched model to choose an appropriate service*); d) predicting the data rate by selecting an advanced measurement that correlates with the matched line model and the selected combination of disturbing signals (*col. 6, lines 19-23*)."

It would have been obvious to one with ordinary skill in the art at the time of invention to include the more in depth steps of de-rating for the purpose of assigning an appropriate line service category to a line (*Sanderson, col. 6, lines 41-55*). The motivation for doing assigning the lines to service categories is that this will allow higher speed lines to be given higher rate traffic and lower speed lines to be given the lower speed traffic.

6. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderson and Posthuma as applied to claim 19 above, and further in view of U.S. Patent 6,507,870 B1, Yokell et al. (Yokell).

Regarding claim 28, Sanderson and Posthuma what Yokell discloses, "further comprising the step of billing for said selected line based on the data rate supported by said selected line (*col. 14, lines 50-col. 15, lines 1-9 when the customer switches speeds the DSL provider will also change and this can lead to a change in price*)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the appropriate price for the corresponding data rate for the purpose of allowing the customer to choose the appropriate high-speed access data plan desired. The motivation being more customer flexibility in choosing an affordable high-speed access data plan.

***Allowable Subject Matter***

7. Claims 1-18 are allowed as indicated below in response to applicant's arguments.

8. Claims 35 and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

9. Applicant's arguments, see REMARKS, page 10, *Rejections under 35 U.S.C. §112*, filed 15 February 2006, with respect to the 35 U.S.C. 112, first paragraph rejections of claims 17, 18, 35, and 36 have been fully considered and are persuasive. The 35 U.S.C. 112, first paragraph rejections of claims 17, 18, 35, and 36 have been withdrawn.

10. Applicant's arguments, see REMARKS, page 11, *Rejections under 35 U.S.C. §102*, filed 15 February 2006, with respect to the 35 U.S.C. 102 and 35 U.S.C. 103 (same argument applied for 103 rejections, see page 12 of REMARKS) rejections of claims 1-16 have been fully considered and are persuasive. The 35 U.S.C. 102 and 103 rejections of claims 1-16 have been withdrawn. Therefore, claims 1-16 are now allowable over the prior art.



11. Applicant's arguments, see REMARKS, page 11, *Rejections Under 35 U.S.C. §102*, paragraph 3, with respect to claims 19-34 have been considered but are moot in view of the new ground(s) of rejection.

12. Applicant's arguments filed 15 February 2005 have been fully considered but they are not persuasive.

Regarding claims 37-43, applicant argues that "Sanderson does not show or suggest the use of models in the fashion recited in the claims." Applicant further argues for claims 42 and 43 that Sanderson does not disclose a "noise model" used in de-rating the performance of the line. The examiner respectfully disagrees.

As noted in the rejections above, the process of categorizing the line based on test measurements in Sanderson is the equivalent of using a line model to select a data rate. Further support in Sanderson is found in col. 6, lines 21-40 where the different tones used to test the line allow the system to then categorize the line into a different model type such as, green for supporting the highest level of service or data rate.

Sanderson further describes the models as incorporating noise from the various testing (disturbing) signals. This is seen in col. 6, lines 41-51 where the signal to noise ratio inherently incorporates the noise into appropriate categorization of the line under testing.

### **Conclusion**

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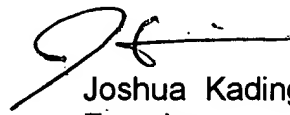
13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Kading whose telephone number is (571) 272-3070. The examiner can normally be reached on M-F: 8:30AM-5PM.

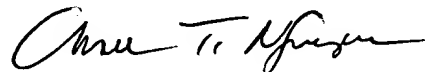
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (571) 272-3126. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joshua Kading  
Examiner  
Art Unit 2661

June 10, 2005



CHAU NGUYEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600